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Optimizing Plant Production

Upgrades at McNamara Contracting improve productivity and profitability

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Paving Equipment

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Preventive maintenance

Documentation and 27 years of experience provide valuable insight into when plant upgrades are made at McNamara Contracting Apple Valley, MN hot mix asphalt facility

By Greg Udelhofen, editor

There's not much Lloyd Vivant doesn't know about running a hot mix asphalt plant, but he continues to look for ways to optimize mix production at this Minnesota plant. And with 27 years of experience as the plant manager for McNamara Contracting Inc., Vivant's experience goes a long way in achieving a cost-effective operation, and knowing what preventive maintenance action is needed during the winter to avoid downtime during peak summer months.

McNamara's business consists of new and reconstructed road systems, with asphalt production and paving one part company's total product and service offering. The asphalt segment supports two paving crews from May until Thanksgiving, with over 90 percent of the total hot mix asphalt produced by the company used on McNamara projects.

On average, Vivant turns

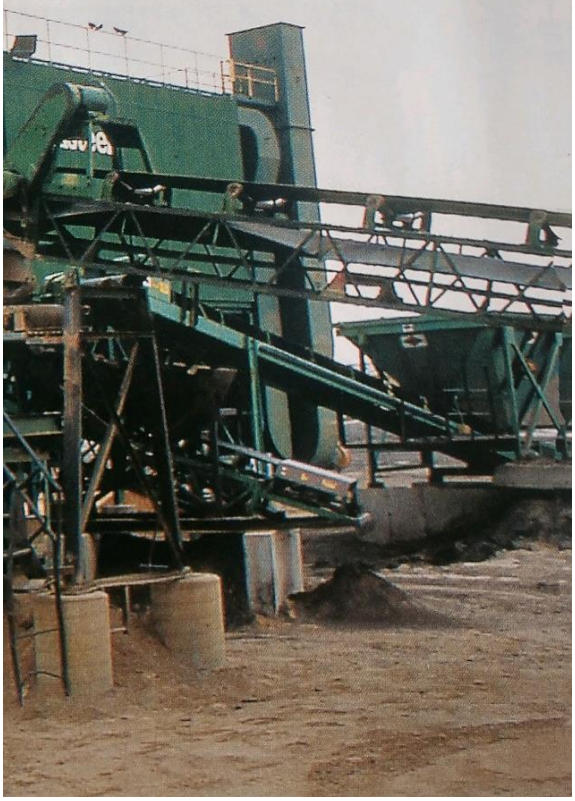
is key

out close to 300,000 tons of mix annually with the 32-year-old Barber-Greene (which was acquired by Astec) batch plant (which Vivant has converted to a continuous mix process), with a large percentage of that mix designed for municipal development projects. Within a matter of months, McNamara will sell its existing plant equipment and erect a new Dillman Duo-Drum plant at a new location in Apple Valley.

"During our construction season we're averaging about 1,800 tons a day (production), and that's about 50 percent capacity of what this plant could produce," Vivant says. "But since we're relocating our production facility, it just makes sense to invest in a new plant at this time."

Good investment decisions

Some of the more significant changes and/or investments Vivant has implemented to optimize production and lower



Lloyd Vivant, plant manager, installed a new Hauck burner on the Apple Valley plant's counter-flow dryer and insulated the dryer drum — achieving a year-end fuel savings of 25 percent.

operating costs include:

- Installing a reclaimed asphalt pavement (RAP) system to the plant to save approximately $1 per ton in production costs,
- Switching over to split aggregates in order to eliminate material rejects,
- Switching from a wet wash aggregate cleaning system to a baghouse filtration system to eliminate the monthly cost of cleaning the plant's holding pond and achieve a four percent dust return back into the mix,
- Installing a new Hauck burner on the plant's counter-flow dryer and insulating the dryer drum to cut fuel consumption by 25 percent,
- Changing the airflow of the asphalt oil heating system (recirculating combusted air to pre-heat intake air on the burner) to cut the oil heating costs by 30 percent,
- Installing a baghouse dust surge bin and chute scale to achieve consistent dust content reintroduced back into the mixes produced, which has had a positive impact on bonuses paid for meeting air void and compaction specification (bonuses can amount to $4,000 to $5,000 a day on some projects),
- and installing a Silo Sentry to prevent accidental silo discharge when loading trucks, which has saved in the cost of cleaning up trucks, and more importantly, preventing injury to truck drivers.

Vivant's meticulous record keeping has proved to be the impetus for many of the improvements made to the plant.

"I keep track of everything on a daily basis — air temperature, rainfall, moisture content of the aggregate we're using that day, how much (natural) gas I consumed for the day, what kind of problems we had during the day — you name it, and I probably have a record of it," Vivant says.

So when he puts together a replacement parts' list at the end of the season, he has a pretty good idea of what needs to be replaced based on production costs and problems recorded throughout the summer.

"Based on how the plant ran during the season and my past experience, I generally have a pretty good idea what needs attention," he says. "I'm also more inclined to take a preventive maintenance approach and replace anything I think may cause problems in the upcoming season."

On average, Vivant budgets approximately $75,000 for annual maintenance of the plant. Hopefully those costs will decrease once the new plant is brought online this spring.

Bottom line benefits

As Vivant points out, optimizing plant production is really about profitability and not about maximum production.

"The old school of thought wasn't concerned about burner efficiency and employee safety. The bottom line was to get the mix out as fast as we could," Vivant notes. "But that's all changed with increased competition, tighter margins, increased fuel costs and making sure we can address all those issues while maintaining a safe working environment for our people."

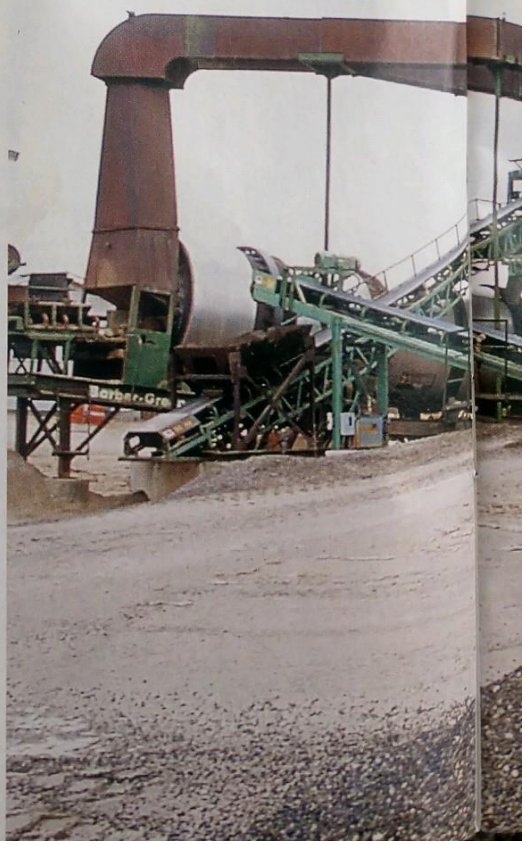
As plant manager, however, Vivant has complete autonomy in making decisions he believes will benefit the operation and the company as a whole.

"I'm just as concerned about making money as the owner is," Vivant says. "My job is to operate this plant profitably, and I'm constantly thinking of ways to improve the overall performance of the plant."

When he made the decision to replace the dryer burner a year ago, Vivant was being proactive in anticipation of increasing fuel costs.

"On average, it can cost $1 to $1.50 per ton to dry aggregate," he says. "Back in the '80s when fuel costs skyrocketed, burner efficiency became real important. The same thing happened a year ago when our gas supplier told us gas prices could double."

With McNamara's fuel costs averaging $300,000 to $500,000 annually, the thought of those costs doubling



placed a bit of urgency on Vivant's quest to minimize the impact of a higher fuel bill.

"We looked at what insulating the dryer drum and a new burner could save us, and we were pleased with the significant savings we did achieve," Vivant says.

Saving 10 to 15 percent would have been a decent return on the cost of a new burner and insulating the dryer drum, but when year-end fuel savings of 25 percent were achieved, the investment was more than covered.

"There are other ways to cut costs in order to improve the overall profitability of the plant, and they don't require a major investment," Vivant says.

Besides the usual maintenance repairs, like replacing the dryer drum seals, Vivant considers mix temperature and makes adjustments where and when he can.

"Normally when mixes leave the plant, we're sending them

Cutting production costs

If you want to consider ways to cut your operating costs in order to better optimize your asphalt production capabilities, think about the following suggestions provided by Clarence Richard, whose company specializes in plant optimization:

1) Mix temperature — Consider a three percent energy savings and a three percent production increase for every 10 degrees you drop.

2) Moisture content — Think of ways to keep your crushed aggregate dry. Consider a 13 percent energy savings and a 13 percent production increase for every 1 percent of moisture you can keep out of your crushed aggregate.

3) Burner performance — An exhaust gas analyzer can help monitor how efficiently you dryer drum burner is working. Fine-tuning your burner on a regular basis will save fuel costs, help meet emission compliance, minimize emission damage to your baghouse filter bags, and improve overall production.

4) Insulate your dryer drum and baghouse.

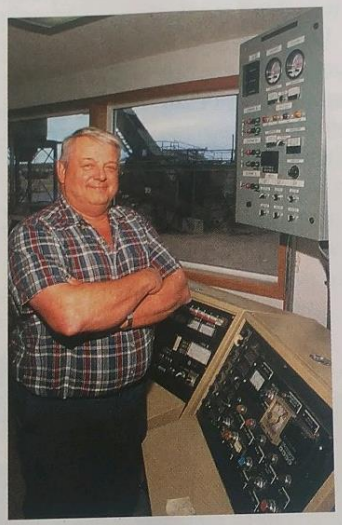
5) Consider fuel alternatives.

out at 350 degrees F. But if it's a base mix, we can send it out at 270 to 290 degrees F and the temperature difference won't hurt the compaction density and workability of that base mat," Vivant says.

Vivant's advice

The improvements Vivant has made to the McNamara plant may not be rocket science upgrades, but all have contributed to the company's asphalt production optimization, and overall profitability.

For other plant operators, Vivant strongly suggests establishing a discipline of documenting everything that happens at the plant on a daily basis.



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– Lloyd Vivant, plant manager, McNamara Contracting Inc.

"You need to record operating conditions (temperature, moisture, etc.), and what you're doing to compensate for problems you maybe experiencing," Vivant says. "You need to document what's working and what's not. You need to keep track of your operating costs (fuel consumption) and track how changes positively or negatively impact your operating costs.

"With that information you can then communicate with others (equipment manufacturers, consultants, other plant operators) and hopefully come up with ideas on ways to improve your production capabilities and cut your costs at the same time," Vivant adds. "And that's what we'll continue to do even after we install our new plant." ■